

Chapter 7: Health Risks and Health Promotion

Obesity, Physical Activity, Nutrition and Tobacco

Introduction

This chapter will explore health promotion and health risk behaviors in the areas of obesity, physical activity, nutrition and tobacco use. Physical activity and proper nutrition can help prevent and treat chronic diseases, such as diabetes and cardiovascular disease, as well as related risk factors, including high blood pressure, overweight and obesity. Conversely, poor nutrition, lack of physical activity are risk factors for the above conditions.¹ Tobacco use can contribute to a host of acute and chronic health problems (such as early menopause, gum disease, cancer, and osteoporosis).²

This chapter will present data from the Maine and U.S. Behavioral Risk Factor Surveillance Surveys (BRFSS).³ Maine adults are compared by sex, age, income, and public health district, as well as compared to their national counterparts.

Obesity

Obesity is associated with many chronic diseases and conditions, including coronary heart disease, hypertension, high cholesterol, diabetes, post-menopausal breast cancer and osteoarthritis.⁴ According to CDC guidelines, adults with a body mass index (calculated from weight and height measurements) of 25 – 29.9 are considered overweight, and adults with a Body Mass Index (BMI) of 30 or higher are considered obese.⁵

The estimated prevalence of obesity in U.S. women aged 20 years or older has been increasing steadily since the 1990's. According to national BRFSS data, the prevalence of obesity among women increased from 12.2% in 1991 to 18.1% in 1998. Between 1999 and 2009, the rate of obesity among women increased from 19.7% to 26.0%. Similar to U.S., the prevalence of obesity in Maine women has been increasing steadily over time. Obesity increased from 19.7% in 1999 to 22.3% in 2005 and 26.9% in 2009 (Table 7.1).³

According to the Maine BRFSS, almost 60% of Maine women were overweight or obese in 2009; of those, 30.5% of Maine women were overweight and 26.9% were obese (Table 7.1). This percentage was similar to the national average (29.8%- overweight and 26.0%-obese). BRFSS data are self-reported, so the data may underestimate the problem (Table 7.1).³

Table 7.1. Prevalence of overweight and obesity (BMI ≥ 25), Maine and U.S. females, 2005-09

Year	Overweight			Obese		
	Maine		US	Maine		US
	%	(95% CI)	Median % *	%	(95% CI)	Median %*
2005	30.4	(28.1 - 32.8)	29.3	22.3	(20.3 - 24.3)	24.0
2006	29.3	(27.0 - 31.6)	29.5	21.7	(19.8 - 23.7)	24.4
2007	31.1	(29.3 - 33.0)	29.7	23.6	(21.9 - 25.3)	25.9
2008	29.5	(27.7 - 31.2)	29.7	24.4	(22.7 - 26.0)	25.6
2009	30.5	(28.8 - 32.2)	29.8	26.9	(25.3 - 28.5)	26.0

Source: BRFSS³ *Based on 51 states

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Sex

In 2009, more than half (57.4%) of Maine women had a BMI ≥ 25 (they were overweight or obese); this is statistically higher than in 1999 (48.6%) and in 2005 (52.7%; Table 7.2). A greater percentage of Maine men are overweight or obese compared to Maine women (Table 7.2).³

Table 7.2. Prevalence of overweight and obesity (BMI ≥ 25) by sex, Maine, 2005-2009

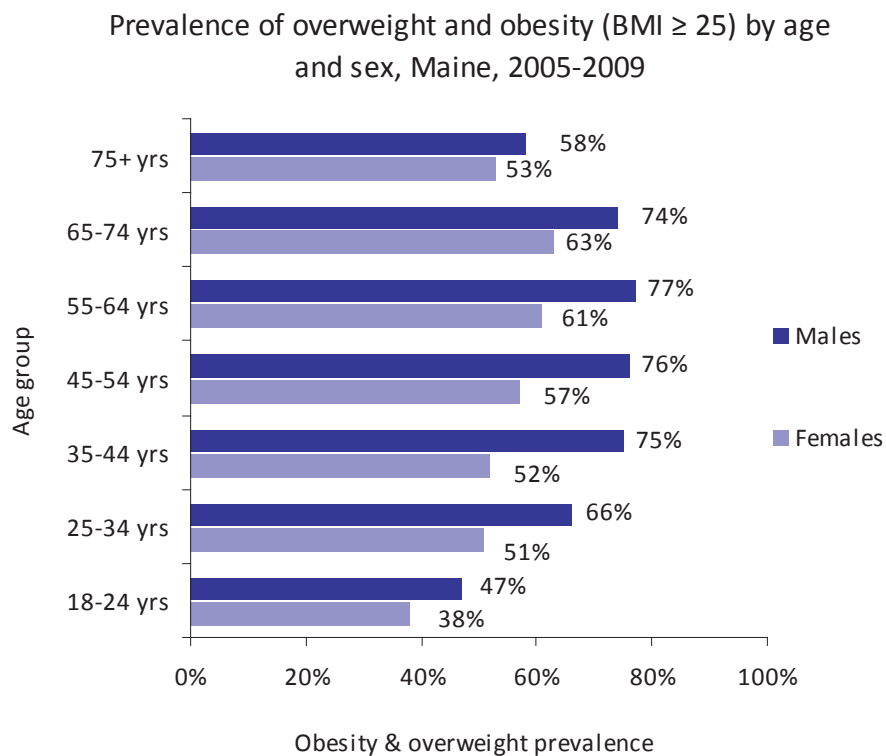
Year	Women		Men	
	%	(95% CI)	%	(95% CI)
2005	52.7	(50.2 - 55.3)	66.5	(63.6 - 69.5)
2006	51.1	(48.5 - 53.7)	68.5	(65.6 - 71.3)
2007	54.8	(52.7 - 56.8)	71.4	(69.1 - 73.6)
2008	53.8	(51.8 - 55.8)	70.0	(67.6 - 72.4)
2009	57.4	(55.5 - 59.3)	71.1	(68.9 - 73.3)

Source: BRFSS³

Age

Between 2005 and 2009, Maine women aged 18-24 years were less likely to be overweight or obese compared to women 25 years or older (Figure 7.1).³ The highest rates of overweight/obesity were among women aged 45-74 years.

Figure 7.1.



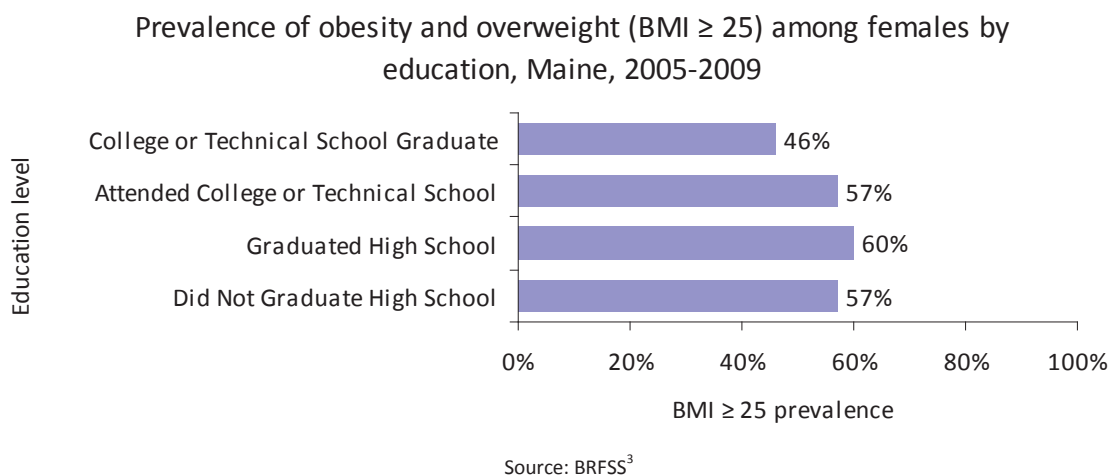
Source: BRFSS³

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Education Level

Maine women who graduated from college were less likely than other women to be overweight or obese. Over 55% of Maine women who did not graduate from college or technical school were overweight or obese compared to 46% of women who graduated from college or technical school (Figure 7.2).³

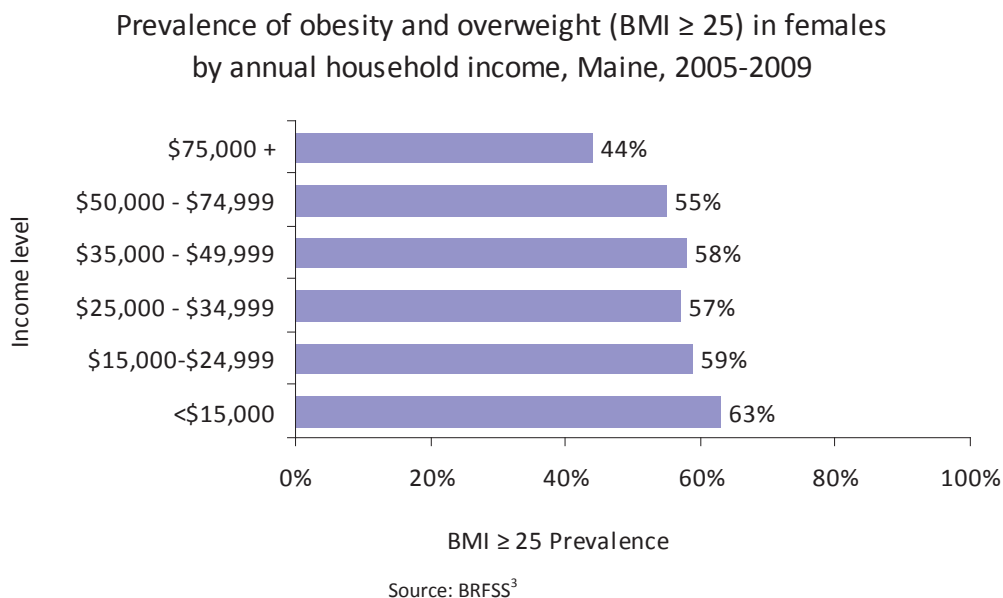
Figure 7.2.



Income

The prevalence of overweight and obesity in Maine women decreased as income increased. Over half of women in all income categories were overweight or obese, except for those with annual household incomes of \$75,000 or more (Figure 7.3).³

Figure 7.3.



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Public Health District

Women in the central and northern public health districts were more likely to be overweight or obese than those in the southern and coastal districts (Table 7.3).³

Table 7.3. Prevalence of obesity and overweight (BMI \geq 25) by public health district and sex, Maine, 2005-2009.

PH District	Women		Men	
	%	(95% CI)	%	(95% CI)
Aroostook	57.9	(53.7 - 62.1)	71.9	(67.1 - 76.8)
Cumberland	45.6	(42.2 - 47.0)	67.4	(64.6 - 70.2)
Central	60.2	(57.6 - 62.9)	68.9	(65.4 - 72.3)
Downeast	53.9	(50.7 - 57.1)	69.5	(65.7 - 73.2)
Midcoast	53.9	(51.7 - 56.0)	67.0	(63.8 - 68.8)
Penquis	57.3	(54.5 - 60.2)	73.8	(70.5 - 77.0)
Western	57.9	(55.3 - 60.5)	70.7	(66.6 - 72.7)
York	54.8	(51.9 - 57.7)	70.1	(66.9 - 73.2)

Source: BRFSS³

Physical Activity

Physical activity is associated with a reduction of obesity-related chronic diseases and osteoporosis; it is also associated with good mental health.⁴ The USDA 2010 Dietary Guidelines for Americans recommend that adults 18-64 years old get at least 150 minutes of moderate-intensity activity per week, or 75 minutes of vigorous-intensity aerobic physical activity per week.⁶

The BRFSS includes several questions about physical activity to determine whether adults meet the recommendations for vigorous physical activity (20 or more minutes per day of vigorous physical activity three or more days per week) or the recommendations for moderate physical activity (30 or more minutes of moderate physical activity for five or more days per week). Note that the most recent year of data used in this report was 2009, so the questions used on BRFSS are based on the pre-2010 physical activity recommendations mentioned above. Moderate physical activity was defined as “brisk walking, bicycling, vacuuming, gardening, or anything else that causes small increases in breathing or heart rate.” Vigorous activity was defined as, “running, aerobics, heavy yard work, or anything else that causes large increases in breathing or heart rate.” Physical activity questions on the BRFSS were asked in 2005, 2007 and 2009.³

In 2009, over half (53.7%) of Maine women met the recommendation for physical activity compared with 48.6% of U.S. women. In 2005, 2007 and 2009, a greater proportion of Maine women participated in moderate or vigorous physical activity compared to U.S. women. (Table 7.4).³

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Table 7.4. Females who met recommendations for moderate or vigorous physical activity, U.S. and Maine, 2005, 2007, 2009.

Year	Maine		US
	%	(95% CI)	Median % *
2005	52.7	(50.2 - 55.2)	47.9
2007	54.2	(52.2 - 56.2)	47.5
2009	53.7	(51.9 - 55.6)	48.6

Source: BRFSS³ *Based on 51 states

Sex

In 2009, the percentage of Maine women and men who participated in moderate physical activity was similar (women: 45.6%, men: 44.8%), however men were more likely than women to participate in vigorous physical activity (women: 27.3%, men: 38.6%; Table 7.5). There was no change in the percentage of women participating in moderate/vigorous physical activity between 2005 and 2009.³

Table 7.5. Adults who met recommendations for moderate or vigorous physical activity by sex, Maine, 2005, 2007, 2009.

Year	Moderate Physical Activity				Vigorous Physical Activity			
	Females		Males		Females		Males	
	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
2005	44.7	(42.2 - 47.2)	43.1	(40.1 - 46.2)	26.7	(24.5 - 28.9)	35.2	(32.2 - 38.3)
2007	45.8	(43.7 - 47.8)	45.5	(43.0 - 48.0)	27.5	(25.6 - 29.5)	36.7	(34.2 - 39.2)
2009	45.6	(43.7 - 47.5)	44.8	(42.4 - 47.2)	27.3	(25.6 - 29.1)	38.6	(36.2 - 41.0)

Source: BRFSS³

Age

The percentage of Maine women who met the recommendations for moderate physical activity was similar across age groups spanning 18-74 years, but the percentage was lower among those over age 75 years. Almost half (47.9%) of women aged 18-74 years met the recommendations for moderate physical activity, compared to less than one third (29.8%) of women over age 75. Younger women were more likely than older women to engage in vigorous activity; participation in vigorous activity declined steadily with age. Almost 40% (37.6%) of women aged 18-24 years engaged in vigorous physical activity on a regular basis, compared to 19.3% of those aged 65-74 years, and 9.8% of those over age 75 (Table 7.6). The age pattern was similar for men and women.³

Table 7.6. Adults who met recommendations for moderate and vigorous physical activity by age and sex, Maine, 2005, 2007, 2009.

Age	Moderate Physical Activity				Vigorous Physical Activity			
	Females		Males		Females		Males	
	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
18-24	47.9	(41.3 - 54.5)	50.8	(43.9 - 57.6)	37.6	(31.2 - 44.0)	53.9	(47.0 - 60.7)
25-34	48.9	(45.3 - 52.5)	46.8	(42.3 - 51.3)	34.2	(30.9 - 37.5)	40.2	(35.8 - 44.6)
35-44	48.2	(45.5 - 50.9)	44.0	(40.6 - 47.4)	32.1	(29.5 - 34.6)	39.7	(36.4 - 43.0)
45-54	47.6	(45.3 - 49.9)	40.6	(37.8 - 43.3)	27.6	(25.6 - 29.7)	33.7	(31.0 - 36.4)
55-64	45.8	(43.5 - 48.1)	44.5	(41.7 - 47.3)	24.7	(22.7 - 26.7)	31.0	(28.4 - 33.5)
65-74	43.6	(40.6 - 46.5)	45.0	(41.3 - 48.6)	19.3	(17.0 - 21.5)	31.9	(28.4 - 35.3)
75+	29.8	(26.9 - 32.7)	41.1	(36.5 - 45.8)	9.8	(7.9 - 11.7)	22.9	(18.9 - 26.9)

Source: BRFSS³

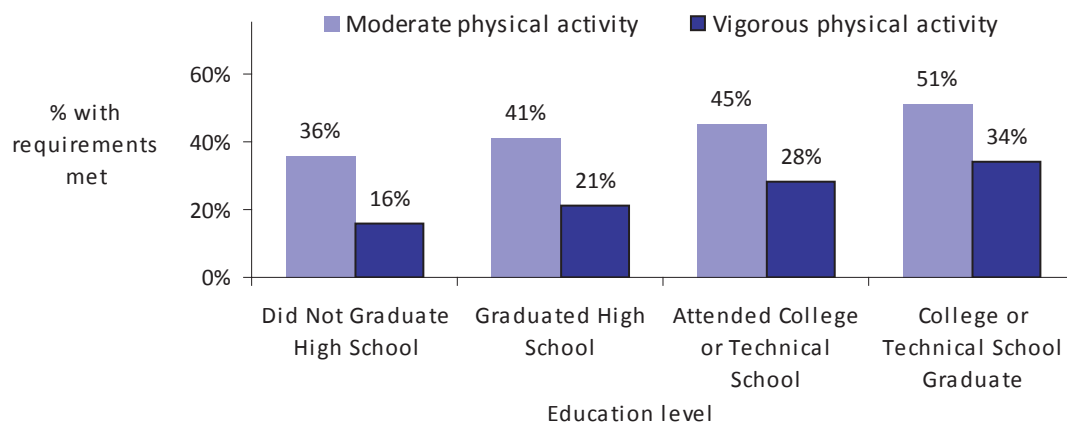
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Education Level

The percentage of Maine women who met both moderate and vigorous physical activity recommendations increased with level of education (Figure 7.4). Among women who did not graduate from high school, 36% reported meeting the recommendations for moderate physical activity and 16% reported meeting the recommendations for vigorous physical activity compared to 51% and 34% of college/technical school graduates, respectively.³

Figure 7.4.

Females who met requirements for moderate or vigorous physical activity by education, Maine, 2005, 2007, 2009



Source: BRFSS³

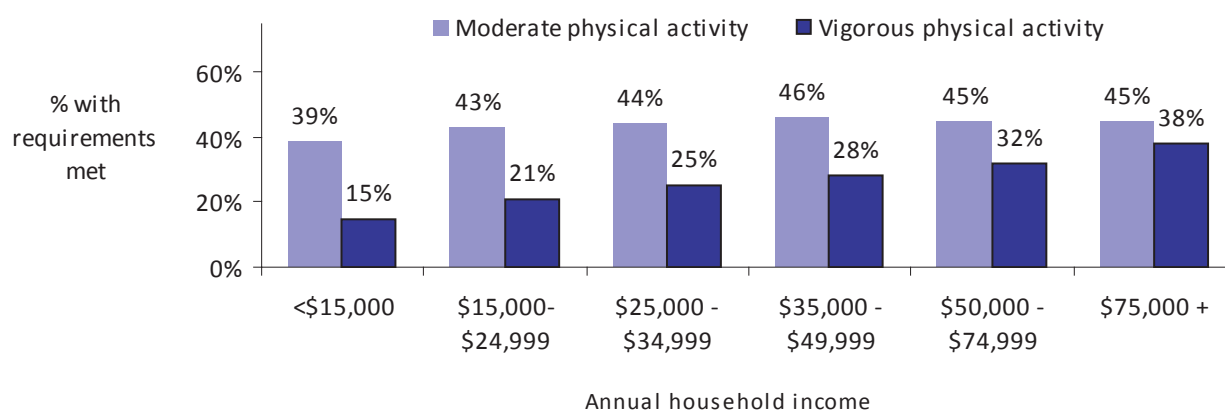
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Income

The percentage of Maine women who met the recommendations for moderate physical activity did not vary by level of income. However, the percent who met the recommendations for vigorous physical activity increased steadily with income (Figure 7.5). About 15% of women who reported a household income of less than \$15,000 reported regular vigorous physical activity compared to 38% of women who reported household incomes greater than \$75,000.³

Figure 7.5.

Females who met requirements for moderate and vigorous physical activity
by income, Maine, 2005, 2007, 2009



Source: BRFSS³

Public Health District

Women in the southern and coastal districts in Maine were more likely to participate in vigorous physical activity. Prevalence of moderate physical activity among women was similar throughout the state (Table 7.7).³

Table 7.7. Adults who met recommendations for moderate and vigorous physical activity by public health district and sex, Maine, 2005, 2007, 2009.

PH District	Moderate Physical Activity				Vigorous Physical Activity			
	Females		Males		Females		Males	
	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Aroostook	43.9	(38.6 - 49.3)	40.5	(34.0 - 47.1)	21.0	(16.9 - 25.1)	33.4	(26.9 - 39.8)
Cumberland	49.2	(46.1 - 52.3)	44.1	(40.3 - 47.8)	32.7	(29.8 - 35.6)	39.9	(36.2 - 43.6)
Central	46.2	(42.9 - 49.5)	41.1	(36.6 - 45.7)	24.0	(21.2 - 26.7)	33.9	(29.3 - 38.5)
Downeast	46.7	(42.7 - 50.8)	49.0	(43.8 - 54.1)	25.0	(21.5 - 28.5)	34.9	(30.0 - 39.8)
Midcoast	46.2	(43.4 - 48.9)	50.3	(47.0 - 53.6)	27.8	(25.2 - 30.4)	40.5	(37.2 - 43.8)
Penquis	41.0	(37.3 - 44.6)	46.3	(41.8 - 50.8)	26.0	(22.6 - 29.3)	35.3	(30.9 - 39.6)
Western	43.7	(40.4 - 47.0)	42.7	(38.7 - 46.6)	24.4	(21.5 - 27.2)	36.7	(32.7 - 40.6)
York	44.4	(40.8 - 48.0)	44.3	(39.9 - 48.7)	29.8	(26.4 - 33.3)	36.7	(32.4 - 41.0)

Source: BRFSS³

Nutrition

Nutrition is associated with both reduced risk and increased risk of some diseases and conditions. The benefits associated with a healthful eating (as recommended by the Dietary Guidelines for Americans), include:⁷

- Decreased risk of chronic diseases, such as type 2 diabetes, hypertension, and certain cancers
- Decreased risk of overweight and obesity
- Decreased risk of micronutrient deficiencies

Poor diet (nutrient deficiencies as well as excesses and imbalances in diet composition) is associated with increased risk of diseases including cardiovascular disease, hypertension, type 2 diabetes, osteoporosis and some types of cancer.⁶

Nutrition is especially important for pregnant or breastfeeding women, as their demands for essential nutrients will be higher during this critical time. All the nourishment for the developing baby comes from the mother, either through the foods she eats or the supplements she takes.⁴

It is also critical for women be knowledgeable about proper nutrition because they often control the eating habits of their children. The 2010 Dietary Guidelines for Americans recommend that adults consume 2.5 cups of vegetables and 2 cups of fruits every day, although the amount varies depending on age, sex and physical activity.⁶

In Maine, about one in three (34.2%) women consumed five or more servings of fruits and vegetables per day in 2009. This is higher than the U.S. average of 27.7%. In 2005, 2007, and 2009 Maine women were more likely than U.S. women to consume five or more servings of fruits and vegetables per day.

Sex

Maine women are more likely than Maine men to consume the recommended servings of fruits and vegetables each day (Table 7.8).³

Table 7.8. Adults who consumed 5+ fruit and vegetable servings per day by sex, U.S. and Maine, 2005, 2007, 2009.

Year	Maine Females		US Females	Maine Males	
	%	(95% CI)	Median % *	%	(95% CI)
2005	35.5	(33.2 - 37.8)	28.1	21.2	(18.7 - 23.7)
2007	34.9	(32.9 - 36.9)	28.8	21.8	(19.8 - 23.8)
2009	34.2	(32.5 - 36.0)	27.7	21.2	(19.4 - 23.1)

Source: BRFSS³ *Based on 51 states

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Age

Maine Women over the age of 75 were more likely than younger women (<age 54) to consume five or more fruit and vegetable servings per day (Table 7.9).³ There were no other statistically significant differences in fruit/vegetable consumption by age.

Table 7.9. Adults who consumed 5+ fruit and vegetable servings per day by age and sex, Maine, 2005, 2007, 2009.

Age	Females		Males	
	%	(95% CI)	%	(95% CI)
18-24	31.9	(25.8 - 37.9)	23.9	(18.0 - 29.7)
25-34	30.4	(27.2 - 33.6)	18.0	(14.8 - 21.3)
35-44	33.1	(30.6 - 35.6)	17.2	(14.7 - 19.6)
45-54	35.5	(33.3 - 37.7)	20.3	(18.1 - 22.6)
55-64	36.6	(34.4 - 38.8)	23.3	(20.9 - 25.7)
65-74	35.9	(33.2 - 38.6)	24.1	(21.0 - 27.2)
75+	41.5	(38.5 - 44.5)	30.0	(25.8 - 34.1)

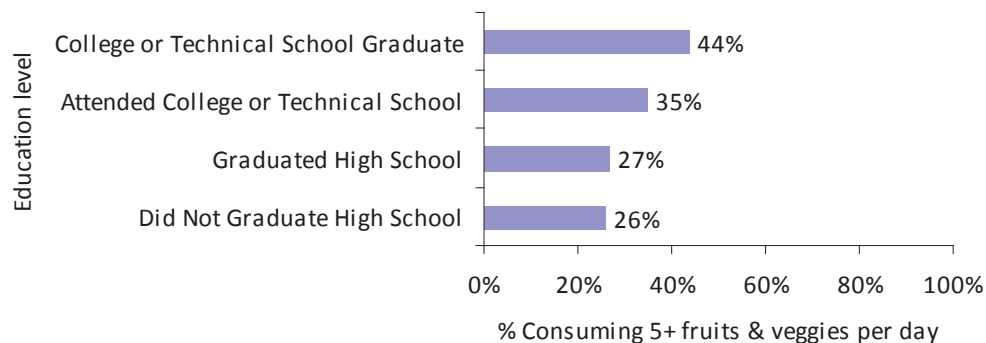
Source: BRFSS³

Education Level

The number of Maine women who consumed the recommended amount of fruits and vegetables increased with the number of years of education (Figure 7.6).³

Figure 7.6.

Prevalence of females who consume 5+ fruit and vegetable servings per day by education, Maine, 2005, 2007, 2009



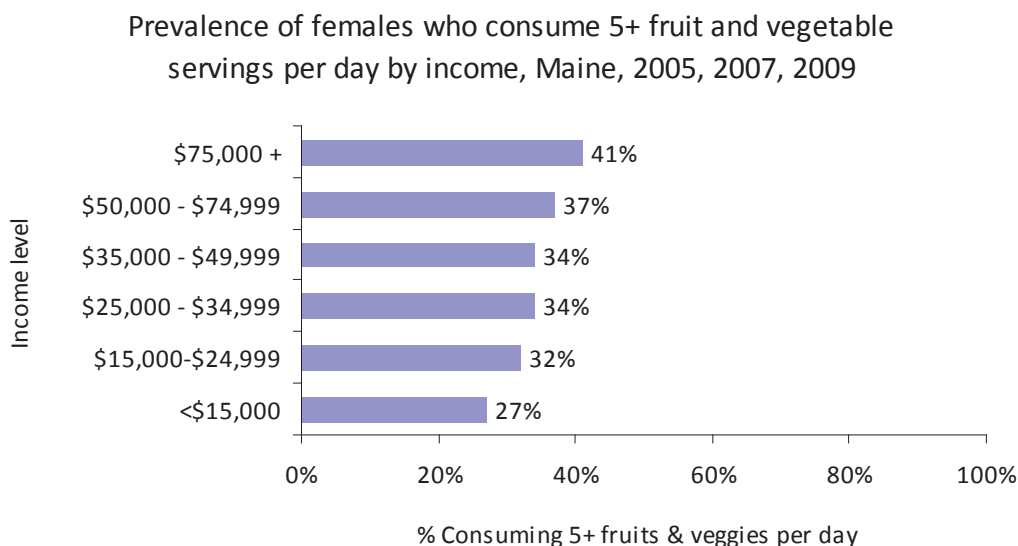
Source: BRFSS³

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Income

The proportion of women who consumed 5 or more fruit and vegetable servings per day increased with higher annual household income (Figure 7.7).³

Figure 7.7.



Source: BRFSS³

Public Health District

Women in southern and coastal public health districts of Maine tended to eat more fruits and vegetables per day than central and northern districts. In Aroostook and Central districts, 28.3% and 29.9% of women reported consuming 5 or more servings of fruits and vegetables per day. Comparatively, 41.5% and 35.0% of women in Cumberland and York districts reported consuming the recommended daily amount of fruits and vegetables (Table 7.10).³

Table 7.10. Adults who consume 5+ fruit and vegetable servings per day by public health district and sex, Maine, 2005, 2007, 2009.

PH District	Females		Males	
	%	(95% CI)	%	(95% CI)
Aroostook	28.3	(23.8 - 32.7)	18.4	(13.0 - 23.9)
Cumberland	41.5	(38.5 - 44.4)	23.2	(20.2 - 26.2)
Central	29.9	(27.0 - 32.8)	18.7	(15.2 - 22.2)
Downeast	37.5	(33.8 - 41.2)	21.1	(17.1 - 25.1)
Midcoast	37.7	(35.1 - 40.3)	23.4	(20.8 - 26.1)
Penquis	32.6	(29.1 - 36.1)	17.5	(14.2 - 20.9)
Western	31.1	(28.1 - 34.0)	22.7	(19.4 - 26.0)
York	35.0	(31.6 - 38.4)	23.0	(19.3 - 26.6)

Source: BRFSS³

Tobacco

Smoking is associated with a number of poor health outcomes including cancer (lung, mouth pharynx, larynx, esophagus, pancreas, uterine cervix, kidney and bladder), chronic bronchitis, chronic obstructive pulmonary disease, emphysema, heart disease, cerebrovascular disease, atherosclerosis, osteoporosis, and vision loss.^{8,9} For women, smoking can affect fertility, fetal and child development.⁹

Sex

The prevalence of Maine women who were current smokers decreased between 2005 and 2009, from 19.5% to 15.8%. More Maine men than Maine women were current smokers between 2005 and 2009. In 2009 the percentage of Maine women who were current smokers was slightly less than that of women in the U.S. (15.8% vs 16.7%). Between 2007 and 2008 there was a significant decrease in the prevalence of female smokers in Maine and the U.S. There was not a comparable drop among Maine men (Table 7.11).³ On April 1, 2009, the largest federal tobacco excise tax increase in history went into effect, raising the excise tax for cigarettes from \$0.39 to \$1.01.¹⁰ This could have contributed to the decline seen in 2008, but other survey data (e.g., National Health Interview Survey) did not find similar declines in the rate.

Table 7.11. Prevalence of current smoking in adults by sex, U.S. and Maine, 2005-2009.

Year	Maine Females		US Females	Maine Males	
	%	(95% CI)	Median % *	%	(95% CI)
2005	19.5	(17.4 - 21.6)	19.2	22.2	(19.7 - 24.7)
2006	19.9	(17.9 - 21.9)	18.4	22.0	(19.4 - 24.6)
2007	19.3	(17.5 - 21.1)	18.4	21.1	(19.1 - 23.1)
2008	15.0	(13.6 - 16.4)	16.7	21.6	(19.4 - 23.8)
2009	15.8	(14.4 - 17.2)	16.7	18.9	(16.9 - 20.8)

Source: BRFSS³ *Based on 51 states

Age

The number of Maine women who were current smokers decreased as age increased. Approximately 27% of women between the ages of 18-24 are current smokers, compared to 10.7% of women aged 65-74 and 4.4% of women over age 75 years. Smoking rates among men and women in Maine between 2005 and 2009 were similar among most age groups, except men ages 25-34 years and those 55-64 years were more likely to report being a current smoker compared to women in those age groups (Table 7.12).³

Table 7.12. Prevalence of current smoking in adults by age and sex, Maine, 2005-2009.

Age	Females		Males	
	%	(95% CI)	%	(95% CI)
18-24	26.7	(22.3 - 31.1)	25.6	(21.0 - 30.2)
25-34	24.3	(22.0 - 26.7)	32.7	(29.4 - 36.0)
35-44	21.2	(19.4 - 23.0)	23.9	(21.6 - 26.1)
45-54	20.2	(18.8 - 21.7)	22.5	(20.6 - 24.3)
55-64	13.4	(12.2 - 14.7)	17.1	(15.5 - 18.8)
65-74	10.7	(9.3 - 12.2)	10.5	(8.8 - 12.3)
75+	4.4	(3.5 - 5.4)	3.0	(1.8 - 4.2)

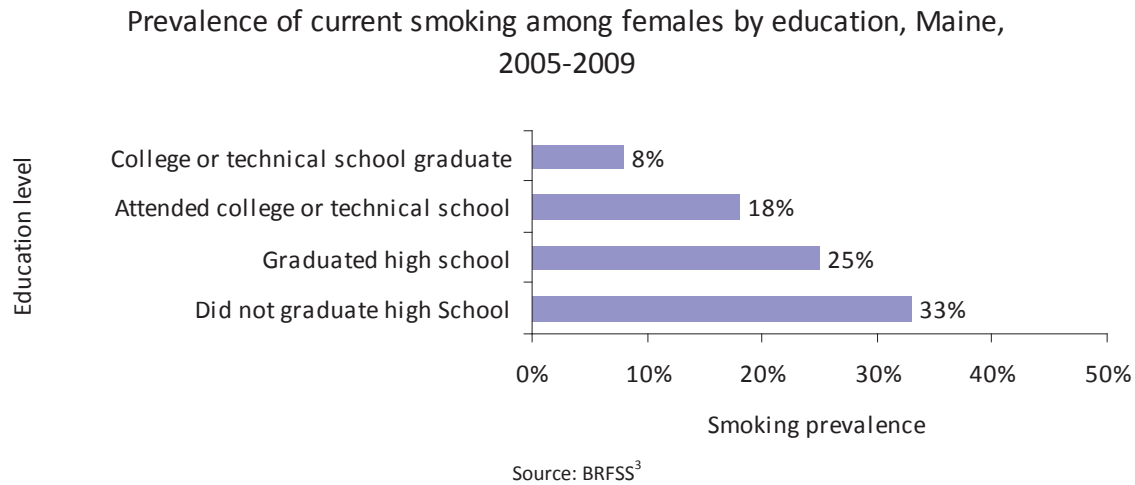
Source: BRFSS³

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Education Level

Between 2005 and 2009, approximately 33% of Maine women without a high school degree were current smokers, compared to 8% of women who graduated from college or technical school (Figure 7.8).³

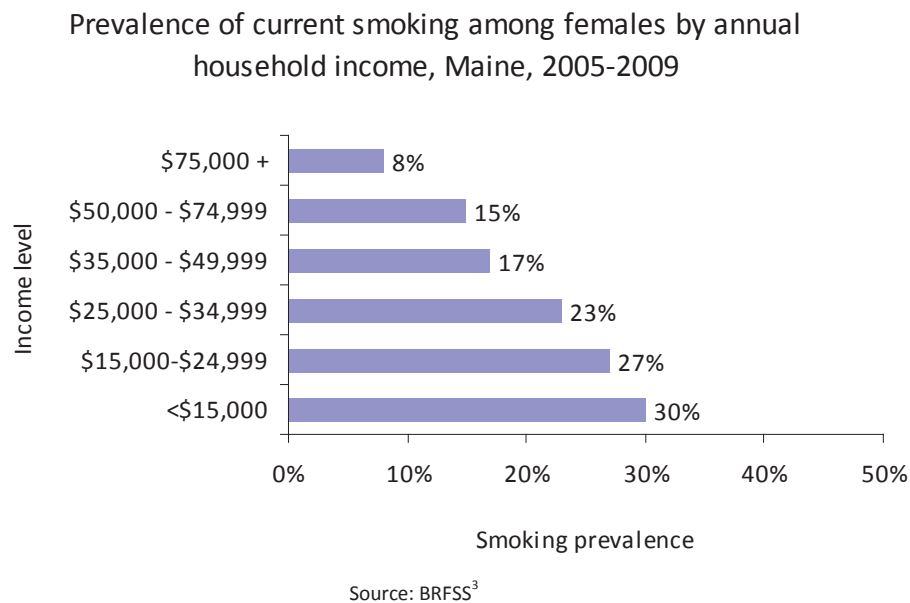
Figure 7.8.



Income

The percentage of women who were current smokers decreased as income increased, from 30% of women with annual household income <\$15,000, to 8% of women with annual household incomes \$75,000 or greater (Figure 7.9).³

Figure 7.9.



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Public Health District

The Cumberland public health district had significantly fewer female and male smokers (13.6% and 16.3%, respectively) compared to the other public health districts, which did not differ in their smoking rates (Table 7.13).³

Table 7.13. Prevalence of current smoking in adults by public health district and sex, Maine, 2005-2009.

PH District	Females		Males	
	%	(95% CI)	%	(95% CI)
Aroostook	19.8	(16.2 - 23.4)	24.9	(20.5 - 29.3)
Cumberland	13.6	(11.9 - 15.2)	16.3	(14.0 - 18.7)
Central	20.5	(18.3 - 22.7)	22.7	(19.7 - 25.7)
Downeast	18.2	(15.7 - 20.6)	22.2	(18.8 - 25.5)
Midcoast	17.3	(15.6 - 19.0)	19.6	(17.4 - 21.7)
Penquis	19.1	(16.9 - 21.4)	25.9	(22.7 - 29.0)
Western	19.8	(17.8 - 21.9)	22.2	(19.6 - 24.8)
York	18.0	(15.5 - 20.5)	19.8	(16.9 - 22.8)

Source: BRFSS³

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